

# Editorial

## **Metaphor in the specialised discourse of scientific disciplines and technology**

Metaphor plays a central role in scientific thought, language and discourse in the same way it does in general human thinking and communication. Metaphorical language pervades the specialised discourse of different disciplines including medical and legal sciences, engineering or architecture. According to Brown (2003: x), “[i]t (metaphor) figures in the scientist’s initial creative impulses, in interpretations of experimental data, in formulations of scientific explanations, and in communications between scientists and between scientists and the rest of the world”. As the articles included in this volume show, some scientific and technical metaphors may be embodied, and others may respond to socio-cultural motivations.

Metaphor studies are currently a flourishing research area and yet the role and function of metaphor in specialised language require major attention. This special issue of *Ibérica* responds to the need for further research on metaphor considered as a ubiquitous cognitive and communicative tool which forms an integral part of the discourse of different scientific disciplines. Since their inception, science and technology have been making use of metaphor and metonymy to design new models, to innovate and to convey novel theories that were difficult to explain to the rest of the scientific community or to humanity in general (Cuadrado et al., 2016: lii-lxi). During the last 30 years, the development of cognitive science has opened up new roads into linguistic specialised areas. Accordingly, contributions analysing the interface between specific languages, professional genres, and linguistic and conceptual metaphor and metonymy have recently emerged (Lakoff & Nuñez, 2000; Colburn & Shute, 2008; Semino, 2011; Herrera-Soler & White, 2012; Deignan, Littlemore & Semino, 2013; Zeidler, 2013). Equally, within the framework of cognitive linguistics, multimodal approaches, cross-linguistic and cross-cultural studies of metaphor and metonymy have served to shed light into new aspects of research on different disciplinary matters (Kövecses, 2005, 2009; Forceville, 2017). In sum, the analysis of metaphorical expressions within specific vocabularies that are context-specific (English, 1998; Cuadrado et al., 2016) provides new

opportunities to explore unnoticed source domains and their correspondences with target expressions.

It is clear that empirical explorations on the role of metaphor in science and technology can bring invaluable insights upon scientific and technical language and reveal the linguistic vehicles that scientists and engineers most frequently use. At the same time, the analysis of source and target mappings, their conceptual integration and linguistic recruitment can be helpful and didactic (Fauconnier & Turner, 2008). Accordingly, this research is likely to be useful not only for scholars but also for specialised language learners and for technical translation.

Taking into account that the scope of this monographic issue was restricted to scientific and technical metaphor in specialised languages, we consider the reception of 20 proposals from 17 European university researchers as a very good sign of the growing interest on this topic. Our sincere recognition is extended to all the proponents, although due to space limitations a selection of the papers was required.

The volume starts off with the work of two outstanding linguists in the area of cognitive linguistics: Antonio Barcelona and Alice Deignan. These leading scholars have kindly accepted to contribute to this monographic issue with two papers that offer major insights on the role of metonymy and metaphor in scientific and technical discourse. We wish to state all our appreciation to both of them.

Antonio Barcelona presents an inspiring study of metonymy in scientific discourse in: “Salience factors determining natural metonymic clippings illustrated through the medical lexicon”. This paper puts forward a breakthrough in metonymy research in scientific and technical language by proposing a salience grid factor for lexical segments or standard abbreviated English lexical forms, known as “clippings”. By applying this model to examples of the medical lexicon, the author argues for its appropriateness in different genres and registers to determine the metonymicity of a clipping. The motivational metonymy to be applied in clippings runs as SALIENT PART OF FORM FOR WHOLE FORM. In his conclusions, Barcelona convincingly proves the adequacy of the salience factor grid in this analysis and underlines the lack of natural metonymic clippings in medical discourse compared to the use of initialisms and acronyms attributing this fact to the need of precision in the medical lexicon.

Alice Deignan, in an original article entitled “Metaphors in texts about

climate change”, analyses three corpora from different genres and registers dealing with a current environmental issue. The paper begins by considering the role of metaphorical thinking and language in science, and then reviews some of the work on scientific metaphor in expert and popular genres. The author proceeds by examining the different uses and functions of metaphor and metonymy with particular focus on the information that young people receive and what they understand about the topic. Deignan compares young people’s use of figurative language with that of researchers and educationalists and draws significant results by concluding that written texts for non-specialists tend to “open up” scientific metaphors, which may lead to misunderstandings of the underlying science. On the other hand, the author finds that young people tend to refer to Arctic and Antarctic animals as symbols of the problem of climate change.

All the selected papers that were accepted for this volume illustrate different contexts and perspectives on metaphor or metonymy use in science and technology. They are summed up as follows.

Ruth Breeze’s “Explaining superfoods: Exploring metaphor scenarios in media science reports” studies the metaphor scenarios used to explain nutritional discoveries through institutional press releases, online news reports, and magazines/blogs. This paper intends to show that the use of metaphorical language is one of the ways in which the media bridge the gap between making new scientific knowledge known, and providing entertainment. As a conclusion, Breeze highlights that the role of the media in informing the public, promoting health and explaining scientific discoveries cannot be separated from the intention to attract and maintain attention.

The next two contributions explore metaphor use in two professional genres. Rosario Caballero in “Buildings that move: Motion metaphors in architectural reviews” focuses on the ways in which built space is described by means of motion metaphors in the genre of the architectural reviews within architectural communication. She describes how motion metaphors could be visual or image metaphors and likewise they help reviewers organize their commentary in the review genre. Caballero concludes that perception in architecture involves several realms of sensory experience which interact and fuse into each other and that this use of motion metaphors is congruent with contemporary architects and reviewers’ enactive – embodied – approach to architectural space.

The article “A cognitive-axiological approach to the chairman’s letter of the leading civil aircraft manufacturers” by M<sup>a</sup> Enriqueta Cortés de los Ríos and Ángel Felices Lago discusses the dominant axiological values in the aeronautical discourse through the genre of Chairman’s letters included in the annual reports of leading civil transport aircraft manufacturers. The authors have found that the metaphorical tools employed in the analysed corpus are generally aimed at reinforcing the positive axiological load inherent to the promotional nature of the chairman’s letter. Cortés and Felices also put forward the strong persuasive and rhetorical power of metaphor, metonymy and image schemas and their suitability to transmit messages schemas related to positive or negative axiological values.

The next four articles study the function of conceptual metaphor in the framing of scientific, technical and medical discourse from different angles. Durán-Escribano and Argüelles-Álvarez focus on the function of domain-specific mappings as conceptual categorisers for scientific and technical vocabularies. The study is based on the qualitative analysis of the metaphorical lexical units included in eight widely accepted specialized language dictionaries. Taking examples from earth sciences and from the more recent technological field of telecommunications, domain-specific correspondences (where both source and target domains pertain to scientific fields) are found to give evidence of their decisive role as theory constitutive elements, in the definition of specific terms, and in the expression of new concepts.

Navarro i Ferrando’s work tackles the cognitive and communicative functions of conceptual metaphor in the field of oncology. Imagistic, orientational, ontological and structural conceptual metaphors are studied, exploring their categorization and conceptualization roles in knowledge construction. Communicative aspects, such as deliberate vs unconscious metaphor usage, and the conventional character of metaphorical expressions are discussed with the purpose of characterizing the discourse of medical science research articles.

Climent and Coll-Florit also explore conceptual metaphor in medical science in their paper on metaphor use by psychiatrists in their talk about schizophrenia. The study is based on a corpus taken from a Spanish documentary film capturing personal interviews to health professionals, patients, and their relatives. From these, psychiatrists’ interventions were selected and analysed in order to quantify and classify the metaphorical expressions employed. The corresponding conceptual metaphors were

depicted and classified according to target domains, revealing a clear relationship to either biomedical or social models of illness.

Another contribution on medical language is Balteiro's "Metaphor in Ebola's popularized scientific discourse", based on a sample of *Scientific American* articles. The author identifies and analyses specific instances of metaphors used to represent ten frame elements in popularized articles on the Ebola disease, depicting medical professionals' mechanisms to communicate their knowledge about Ebola to non-experts. Two main conceptual metaphors stand out, EBOLA IS WAR and RECOVERY IS A ROAD, whose analysis leads to the conclusion that many of their corresponding mappings may be considered as reformulation techniques.

Campos-Pardillos studies the metaphorical imagery used in scholarly papers on EU judicial cooperation. This has recently produced a body of literature discussing the strategies and instruments that make possible to overcome the problems arising from the variety of national jurisdictions in the EU. In these publications, there are frequent metaphors that conceptualize abstract notions with desirable metaphor framings based on living beings and on objects, or portraying cooperation as a journey where progress is the acceptable option or a weapon in a fight against cross-border crime. Conversely, non-cooperation is associated with negative images, mainly obstacles and barriers, and even with a disease for which the legal measures are "remedies" that "alleviate mistrust".

Finally, Jimenez-Munoz and Lahuerta Martínez discuss the evidence of a metaphor-metonymy continuum from a set of cross-field L2 science texts. Using a three-dimensional taxonomy for metaphor (communicative, conceptual and linguistic), and a revision of metonymy types as research instruments, this paper performs a cross-field comparison of a corpus of 150 texts to which CEFR-B1 undergraduates in Economics, Geography, and Chemistry at a Spanish university are exposed. Statistical treatment of the results shows certain variation and trends among disciplines, and the prevalence of a metaphor-metonymy overlap in the areas studied. The findings encourage the use of a cognitive approach when highlighting metaphor and metonymy to L2 students, since the cross-linguistic and cross-cultural variations that characterise these figures may complicate transitioning from literal to figurative language uses to EAP learners.

To conclude, we wish to thank *Ibérica* for allowing us to edit this special issue, and particularly its Editor-in-Chief, Dr. Carmen Pérez-Llantada, who has

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